

PATENT ABSTRACTS OF JAPAN

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(71)Applicant : TOKYO ELECTRIC CO LTD

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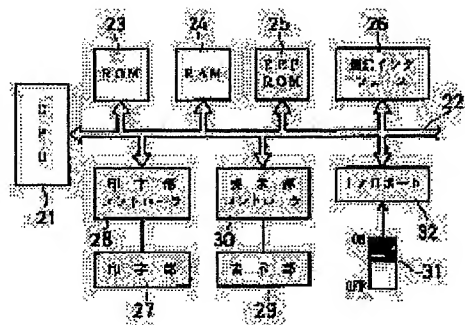
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(54) ELECTROPHOTOGRAPHIC DEVICE

(57)Abstract:

PURPOSE: To eliminate a process for exchanging a storing element or initializing operation by arbitrarily selecting whether or not counted information concerning service life of a photosensitive body is to be written to the storing element, and not carrying out writing of the information to the storing element at the time of printing inspection before shipment.

CONSTITUTION: The device is provided with EEPROM 25 counting the printed number of pieces as the counted information concerning the service life of the photosensitive body. Furthermore, a dip switch 31 is provided to select from outside whether or not data of the counted number of pieces is written to the EEPROM 25. When printing is carried out by connecting the electric power source in a state where the dip switch 31 is turned OFF, the number of printed pieces within the EEPROM 25 is renewed, and if printing is carried out by connecting the electric power source with the switch in an ON state, control is carried out so that the printed number of pieces within the EEPROM 25 is not renewed.



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CLAIMS

[Claim(s)]

[Claim 1] In the electrophotography equipment which has the storage element of the non-volatile which memorizes the digital information about the life of a photo conductor, and which can be written An external selection means to choose from the exterior whether the digital information about the life of said photo conductor is written in said storage element, A selection condition distinction means to distinguish the selection condition by said external selection means when counting of the information about the life of said photo conductor is carried out, Electrophotography equipment characterized by providing the life information write-in control means which controls the write-in actuation to said storage element of the digital information about the life of said photo conductor based on the distinction result by this distinction means.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention is concerned with the electrophotography equipment used for a non-impact printer, a copying machine, etc., and relates to electrophotography equipment equipped with the storage memorized for the digital information especially about the life of a photo conductor, enabling free rewriting.

[0002]

[Description of the Prior Art] the storage element (for example, EEPROM [electric elimination mold programmable read only memory]) of the non-volatile which can write printing number of sheets as digital information about the life of a photo conductor as this conventional kind of electrophotography equipment — counting — it memorizes and there are some which displayed this memorized printing number of sheets on the display (refer to Japanese-Patent-Application-No. No. 75468 [62 to] official report).

[0003] If it is equipment conventionally [this], an operator can recognize whenever [photo conductor's degradation] now from current printing number of sheets, and if it checks by an alarm display etc. having reached the printing marginal number of sheets to which printing number of sheets was set beforehand, deterioration of the quality of printed character accompanying degradation of a photo conductor can be beforehand prevented by exchanging photo conductors.

[0004] By the way, when manufacturing and selling electrophotography equipment, printing inspection is indispensable, several printing is usually actually performed before shipment of a product, and the quality of printed character etc. is inspected. for this reason — if the accumulation storage of some printing number-of-sheets data is carried out after printing inspection at the storage element and a certain measures are not taken — a storage element — printing number-of-sheets data — counting — a product will be shipped while it had memorized.

[0005] Then, the product was shipped, after exchanging the storage element for drawing and the storage element which will seemingly be new from the equipment in front of shipment conventionally, or initializing the printing number-of-sheets data of this storage element to "0" and re-equipping.

[0006]

[Problem(s) to be Solved by the Invention] Thus, in this conventional kind of electrophotography equipment, before shipping as a product, the process which exchanges or initializes the storage element for memorizing the digital information about the life of a photo conductor was required, and useless time and effort and time amount were spent.

[0007] Then, it can choose as arbitration whether this invention writes the digital information about the life of a photo conductor in a storage element, and is going to offer the electrophotography equipment which can skip the process of exchange of a storage element or an initialization activity as does not write the digital information about the life of said photo conductor in a storage element at the time of the printing inspection before shipment.

[0008]

[Means for Solving the Problem] In the electrophotography equipment which has the storage element of the non-volatile which can be written which memorizes the digital information concerning [this invention] the life of a photo conductor An external selection means to choose from the exterior whether the digital information about the life of a photo conductor is written in a storage element, When counting of the information about the life of a photo conductor is carried out, it has a selection condition distinction means

to distinguish the selection condition by the external selection means, and the life information write-in control means which controls the write-in actuation to the storage element of the digital information about the life of a photo conductor based on the distinction result by this distinction means.

[0009]

[Function] If it is this invention of such a configuration, when the write-in C of the digital information about the life of a photo conductor is chosen with an external selection means, if counting of the information about the life of a photo conductor is carried out, the digital information will be written in a storage element, but when a write-in failure is chosen, the digital information is no longer written in a storage element.

[0010]

[Example] Hereafter, one example which applied this invention to the non-impact printer is explained, referring to a drawing.

[0011] drawing in which drawing 1 shows the configuration of a non-impact printer — it is — an end — supporting to revolve — the case 1 with an up and down disengageable other end side — the drum-like photo conductor 2 is mostly arranged in the center section. This photo conductor 2 is that by which a rotation drive is clockwise carried out among an one direction, i.e., drawing, with a drive motor 3. An electrophotography process is followed around the photo conductor 2. As opposed to the electrification charger 4 which electrifies the front face of a photo conductor 2, and the photo conductor charged with this electrification charger 4 Light is irradiated. Information The cleaning equipment 8 and the photo conductor 2 which drop a toner to the aligner 5 which carries out exposure record, the development counter 6 which makes the toner which is a developer adhere to the photo conductor exposed with this aligner 5, and the form conveyed from the imprint charger 7 which makes the toner image of a photo conductor 2 imprint, and a photo conductor 2 The electric discharge charger 9 to discharge is arranged in order.

[0012] Said imprint charger 7 is located in said photo conductor 2 bottom, and one sheet of form is conveyed at a time to predetermined timing by actuation of a pickup roller 11 from the sheet paper cassette 10 prepared in one flank of said case 1 towards the imprint charger 7.

[0013] It is fixed to this form conveyed by the back fixing assembly 12 by which the toner image of a photo conductor 2 was imprinted with the imprint charger 7. And the form to which it was fixed is discharged out of a case with the delivery roller 13. Here, the drive motor 3 which is the driving source of said photo conductor 2 as a driving source of the conveyance device of a form is made to serve a double purpose.

[0014] In addition, when the fan 14 who makes internal heat emit outside, a power unit 15, and said case 1 are separated up and down in said case 1, the covering switch 16 grade which detects it and turns off the power is prepared.

[0015] Drawing 2 is the block diagram showing important section circuitry, and a bus line 22 is minded [which constitutes a control-section body / 21] (central processing unit). The above CPU 21 each part ROM in which the program data for controlling etc. are stored beforehand RAM (random access memory)24 in which 23 and the various memory areas which the above CPU 21 uses by data processing are formed, EEPROM25 which is the storage element of the non-volatile which can be written (electric elimination mold programmable ROM), (Read only memory) As opposed to the host device which outputs printing data Transmission and reception of data The communication interface 26 to perform, a drive motor 3, the electrification charger 4, an aligner 5, a development counter 6, the imprint charger 7, cleaning equipment 8, the electric discharge charger 9, the printing section controller 28 that controls the printing section 27 of fixing assembly 12 grade, respectively, and various information The I/O Port 32 grade into which ON / OFF state signal of the display controller 30 which controls the display 29 for displaying, and DIP switch 31 are inputted is connected.

[0016] The area which memorizes the printing number-of-sheets data N which are the storage information about the life of said photo conductor 2 is formed in Address A at said EEPROM25. Moreover, said DIP switch 31 functions [whether the digital information about the life of said photo conductor 2 is written in the above EEPROM 25, and] as an external selection means to choose from the exterior, chooses write-in C at the time of an OFF state, and chooses a write-in failure at the time of an ON state.

[0017] A deer is carried out, and a program setup of said CPU21 is carried out so that control shown in drawing 4 following powering on may be performed. That is, an injection of a power source reads ON / OFF state signal of DIP switch 31 inputted into I/O Port 32 as ST (step)1.

[0018] And in the case of an OFF state, the flag for memorizing the condition of this DIP switch 31 as ST2 is reset, and it stores in RAM24. Moreover, the printing number-of-sheets data N memorized as ST3 in the

area of the address A of EEPROM25 are read, and it stores in RAM24. Subsequently, it distinguishes whether the above-mentioned printing number-of-sheets data N have reached the value (this example 10000 sheets) equivalent to the life of a photo conductor 2 as ST4. And when having reached, the warning message which tells said display 29 about the life of said photo conductor 2 as ST5 is displayed. When having not reached, this message indicator is not performed. Then, predetermined printing pretreatment is started as ST6.

[0019] When the signal of DIP switch 31 read by ST1 is an ON state, said flag is set as ST7 and it stores in RAM24. Then, predetermined printing pretreatment is started as ST6.

[0020] If printing pretreatment is completed and it will be in a printable condition, it will wait for reception of a printing initiation instruction from a host device through a communication interface 26 as ST8. And reception of a printing initiation instruction investigates the condition of said flag as ST9. (Selection condition distinction means)

[0021] Here, since the write-in C to said EEPROM25 of the printing number-of-sheets data N which are the digital information about the life of said photo conductor 2 is chosen when the flag concerned is reset, after carrying out renewal of the printing number-of-sheets data N stored in RAM as ST10 of "+1", the printing number-of-sheets data N after the updating are written in the area of the address A of said EEPROM25 as ST11. (Life information write-in control means)

[0022] It distinguishes whether the printing number-of-sheets data N after updating have reached the value (this example 10000 sheets) equivalent to the life of said photo conductor 2 as ST12 after an appropriate time. And when having reached, the warning message which tells said display 29 about the life of said photo conductor 2 as ST13 is displayed. When having not reached, this message indicator is not performed. Then, a predetermined print sequence is started as ST14. When said flag is set in ST9, the print sequence of ST14 is started immediately. (Life information write-in control means) Termination of this print sequence waits for reception of return and a printing initiation instruction to ST8.

[0023] In this example of such a configuration, when DIP switch 31 is made into an OFF state and a power source is switched on, the printing number-of-sheets data N memorized in the area of the address A of EEPROM25 are read, and it is stored in RAM24. Then, printing pretreatment is performed and it will be in the reception standby condition of the printing initiation instruction from a host device after processing termination. If there was a printing initiation instruction in this condition, after renewal of the printing number-of-sheets data N in the above RAM 24 of "+1" will be carried out and the printing number-of-sheets data N after updating will be written in the area of the address A of said EEPROM25, each part which forms the printing section 27 is controlled according to the electrophotography process set up beforehand, and printing of drawing information is performed. In this case, since the photo conductor 2 is a life if the printing number-of-sheets data N amount to 10000 sheets, the warning message which shows the life of a photo conductor 2 is displayed on a display 29.

[0024] On the other hand, when DIP switch 31 is made into an OFF state and a power source is switched on, it will be in the reception standby condition of a printing initiation instruction, without reading the printing number-of-sheets data N memorized in the area of the address A of EEPROM25. And if there is a printing initiation instruction, the printing section 27 will be controlled immediately and printing of drawing information will be performed. That is, in this case, even if printing is performed, the printing number-of-sheets data N memorized in the area of the address A of EEPROM25 will not be updated, but the condition before printing will be maintained.

[0025] Therefore, what is necessary is to actually perform several printing before shipment, to inspect a quality of printed character etc., when manufacturing and selling a non-impact printer like this example, but to switch on a power source and just to conduct printing inspection in this example, after making DIP switch 31 into an ON state. Even if it performs several printing by carrying out like this for printing inspection, since the printing number-of-sheets data N memorized in the area of the address A of EEPROM25 maintain initial value "0", they can be shipped as it is.

[0026] Consequently, exchange or the initialization activity of the storage element (EEPROM25 corresponds in this example) for memorizing the digital information about the life of the photo conductor before shipment of a product becomes unnecessary, and the effectiveness which was [compaction / improvement in workability, / of a production process / time amount] excellent can be done so.

[0027] In addition, although EEPROM25 was used in said example as a storage element of the non-volatile which memorizes the digital information about the life of a photo conductor and which can be written, of

course, it is not limited to this. Moreover, information other than printing number of sheets may be used as digital information about the life of a photo conductor. In addition, of course, deformation implementation is variously possible in the range which does not deviate from the summary of this invention.

[0028]

[Effect of the Invention] As explained in full detail above, it can choose as arbitration whether according to this invention, the digital information about the life of a photo conductor is written in a storage element, and the electrophotography equipment which can skip the process of exchange of a storage element or an initialization activity as does not write the digital information about the life of said photo conductor in a storage element at the time of the printing inspection before shipment can be offered.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The outline block diagram of the non-impact printer which applied this invention.

[Drawing 2] The control-block Fig. of the above-mentioned non-impact printer.

[Drawing 3] Drawing showing the main memory of EEPROM in drawing 2.

[Drawing 4] The flow chart showing the program control after powering on of CPU in drawing 2.

[Description of Notations]

2 [— RAM, 25 / — EEPROM, 26 / — A communication interface, 27 / — The printing section, 29 / — A display, 31 / — DIP switch.] — A photo conductor, 21 — CPU, 23 — ROM, 24

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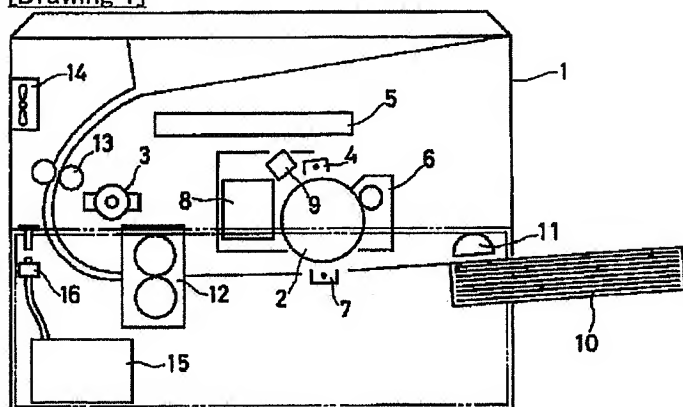
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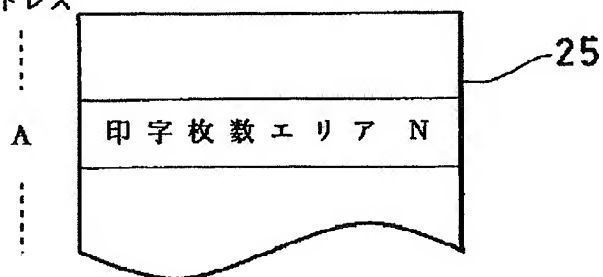
DRAWINGS

[Drawing 1]

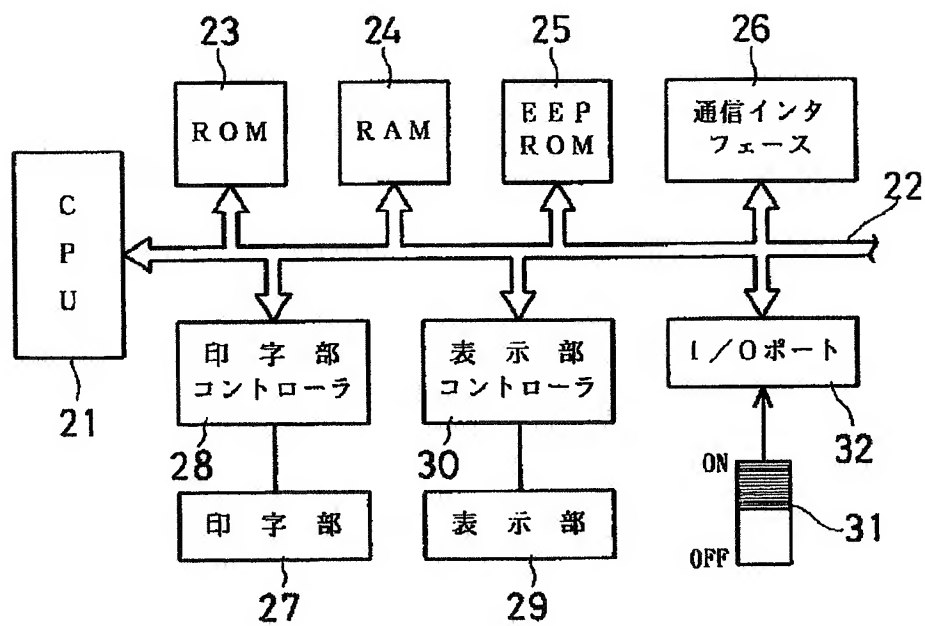


[Drawing 3]

アドレス



[Drawing 2]



[Drawing 4]